

New Mexico Science Content Standards, Benchmarks, and Performance Standards

Kindergarten – 4th Grade

Strand I: Scientific Thinking and Practice

Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

K-4 Benchmark I: Use scientific methods to observe, collect, record, analyze, predict, interpret, and determine reasonableness of data.

Grade	Performance Standards
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K	Use observation and questioning skills in science inquiry (e.g., What happens when something is pushed or pulled?).
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Ask and answer questions about surroundings and share findings with classmates.

1	Make observations, develop simple questions, and make comparisons of familiar situations (e.g., What makes a car go?).
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Describe relationships between objects (e.g., above, next to, below) and predict the results of changing the relationships (e.g., When that block moves, what will happen to the one next to it?).

2	Conduct simple investigations
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Use tools to provide information not directly available through only the senses (e.g., magnifiers, rulers, thermometers).

Make predictions based on observed patterns as opposed to random guessing.

Follow simple instructions for a scientific investigation.

3	Make new observations when discrepancies exist between two descriptions of the same object or phenomenon to improve accuracy.
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Use numerical data in describing and comparing objects, events, and measurements.

Collect data in an investigation and analyze those data.

4	Use instruments to perform investigations (e.g., timers, balances) and communicate findings.
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K-4 Benchmark II: Use scientific thinking and knowledge and communicate findings.

Grade	Performance Standards
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K	Communicate observations and answer questions about surroundings.
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1	Know that simple investigations do not always turn out as planned.
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2	Make accurate observations and communicate findings about investigations.
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3	Understand that predictions are based on observations, measurements, and cause-and-effect relationships.
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4	Communicate ideas and present findings about scientific investigations that are open to critique from others.
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Describe how scientific investigations may differ from one another

Understand how data are used to explain how a simple system functions (e.g., a thermometer to measure heat loss as water cools).

K-4 Benchmark III: Use mathematical skills and vocabulary to analyze data, understand patterns and relationships, and communicate findings.

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Grade Performance Standards

- K** Observe and describe the relative sizes and characteristics of objects (e.g., bigger, brighter, louder, smellier).
- 2** Record observations on simple charts or diagrams.
- 3** Use numerical data in describing and comparing objects, events, and measurements. Pose a question of interest and present observations and measurements with accuracy.
- 4** Identify simple mathematical relationships in a scientific investigation.

Strand II: Content of Science

Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

K-4 Benchmark I: Recognize that matter has different forms and properties.

Grade Performance Standards

- K** Observe that objects are made of different types of materials (e.g., metal, plastic, cloth, wood).
Observe that different materials have different properties (e.g., color, odor).

K-4 Benchmark III: Identify forces and describe the motion of objects.

Grade Performance Standards

- K** Know that the position and motion of an object (direction or speed) are changed by pushing or pulling it.
- 1** Describe ways to make things move, what causes them to stop, and what causes a change of speed, or change of direction.
Observe that gravity makes things fall to the ground unless something holds them up.
- 2** Describe how the strength of a push or pull affects the change in an object's motion (e.g., how a big or small push affects how high a swing rises).
- 3** Observe that some forces produce motion without objects touching (e.g., magnetic force on nails).
- 4** Describe the motion of an object by measuring its change of position over a period of time.
Describe that gravity exerts more force on objects with greater mass.
Describe how some forces act on contact and other forces act at a distance.

Strand III: Science and Society

Standard I: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.

K-4 Benchmark I: Describe how science influences decisions made by individuals and societies.

Grade Performance Standards

- K** Describe how science helps provide products we use every day

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- 1** Describe how science has assisted in creating tools (e.g., plows, knives, telephones, cell phones, computers) to make life easier and more efficient.
Know that men and women of all ethnic and social backgrounds practice science and technology.
- 2** Understand that everybody can do science, invent things, and formulate ideas.
Know that science has discovered many things about objects, events, and nature and that there are many more questions to be answered.
- 4** Know that both men and women of all races and social backgrounds choose science as a career.

5th – 8th Grade

Strand I: Scientific Thinking and Practice

Standard I: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.

5-8 Benchmark I: Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.

GradePerformance Standards

5 Use appropriate technologies (e.g., calculators, computers, balances, spring scales, microscopes) to perform scientific tests and to collect and display data.
Use graphic representations (e.g., charts, graphs, tables, labeled diagrams) to present data and produce explanations for investigations.

6 Examine the reasonableness of data supporting a proposed scientific explanation.
Justify predictions and conclusions based on data.

5-8 Benchmark III: Use mathematical ideas, tools, and techniques to understand scientific knowledge.

GradePerformance Standards

5 Use appropriate units to make precise and varied measurements.
Make predictions based on analyses of data, observations, and explanations.

Strand II: Content of Science

5-8 Benchmark II: Explain the physical processes involved in the transfer, change, and conservation of energy.

Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

5-8 Benchmark III: Describe and explain forces that produce motion in objects.

GradePerformance Standards

5 Understand how the rate of change of position is the velocity of an object in motion.
Recognize that acceleration is the change in velocity with time.
Identify forces in nature (e.g., gravity, magnetism, electricity, friction).
Understand that when a force acts on an object, the object speeds up, slows down, or goes in a different direction.

6 Know that every object exerts gravitational force on every other object dependent on the masses and distance of separation.

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Know that gravitational force is hard to detect unless one of the objects (e.g., Earth) has a lot of mass.

- 7 Know that forces cause motion in living systems, including:
- forces in specific systems in the human body (e.g., how the heart generates blood pressure, how muscles contract and expand to produce motion).

8 Forces

Know that a force has both magnitude and direction.

Analyze the separate forces acting on an object at rest or in motion (e.g., gravity, elastic forces, friction), including how multiple forces reinforce or cancel one another to result in a net force that acts on an object.

Motion

Know that an object's motion is always described relative to some other object or point (i.e., frame of reference).

Understand and apply Newton's Laws of Motion:

- Objects in motion will continue in motion and objects at rest will remain at rest unless acted upon by an unbalanced force (inertia).
- If a greater force is applied to an object a proportionally greater acceleration will occur.
- If an object has more mass the effect of an applied force is proportionally less.